

REMARKS

Reconsideration of the present application is respectfully requested.

Claims 50-62 were rejected under 35 U.S.C. §103 as being unpatentable over U.S. Patent No. 5,335,711 to Paine in view of U.S. Patent No. 833,150 to Attenhoper and further in view of GB 2,037,200. More specifically, in rejecting the claims the

Examiner provides the following:

Paine discloses a system comprising a vacuum furnace (11), a crucible (13) positioned within the vacuum furnace, a heater (25) for melting the metal material, an integral free form fabricated ceramic shell having first opening for receiving molten metal. The ceramic shell has a thin outer wall, and includes supporting members within the mold container and abutting the thin outer wall shown in figure 3, and capable of withstanding casting pressure up to about 24 inches of nickel.

However, Paine fails to disclose a crucible with dispensing means that has an outer portion with at least one entrance for the passage of molten metal and an exit for delivering the molten metal into the mold.

Attenhoper discloses a dispenser with inner and outer tube for delivering water to another source. The water rises into an entrance tube, then exiting upon the highest point of the inner tube (figure). Attenhoper teaches the above differences for the purpose of eliminating any Impurities in the water going to a cleaner source (page 1, lines 12-33).

Therefore, it would have been obvious to one of ordinary skill in the art at the time applicant's invention was made to provide dispensing means as taught by Attenhoper, in Paine because this dispensing construction will eliminate impurities in the molten metal prior to introducing into the mold.

Office Action dated May 16, 2005, p. 2 – 3.

Applicants' respectfully traverse the §103 rejections. In reviewing claims for patentability the United States Patent Office Manual of Patent Examination Procedure instructs that "[t]he examiner bears the initial burden of factually supporting any *prima facie* conclusion of obviousness." See, MPEP § 2142. "To establish a *prima facie* case

of obviousness . . . the prior art reference (or references when combined) must teach or suggest all of the claim limitations.” See, *Id.* The Federal Circuit reiterated in In re Oetiker, 24 USPQ2d 1443, 1446 (Fed. Cir. 1992), that “[t]here must be some reason, suggestion, or motivation found in the prior art whereby a person of ordinary skill in the field of the invention would make the combination” and “[t]hat knowledge can not come from the applicant’s invention itself.” Further, “[a]bsent such suggestion to combine the references, respondents can do no more than piece the invention together using the patented invention as a template. Such hindsight reasoning is impermissible.” Texas Instruments Inc. v. U.S. Int’l Trade Comm’n, 26 USPQ2d 1018, 1029 (Fed. Cir. 1993).

The Federal Circuit has directed that a reference applied appropriately in an obviousness rejection under 35 U.S.C. § 103 must be either in the field of the inventor’s endeavor or reasonably pertinent to the specific problem with which the inventor was involved. In re Deminski, 230 USPQ 313, 315 (Fed. Cir. 1986). It is well settled that references considered legally appropriate for application in a § 103 obviousness rejection must be in a field analogous to that the invention; and are generally referred to as analogous art. The Federal Circuit has instructed that:

[a]nalogous art is that which is relevant to a consideration of obviousness under section 103 Two criteria are relevant in determining whether prior art is analogous: (1) whether the art is from the same field of endeavor, regardless of the problem addressed, and (2) if the art is not within the field of endeavor, whether it is still reasonably pertinent to the particular problem to be solved.

Wang Laboratories Inc. v. Toshiba Corp., 26 USPQ2d 1767, 1773 (Fed. Cir. 1993).

In evaluating the applicability of art that is not within the same field of endeavor the analysis must determine whether the art is still reasonably pertinent to the problem to be solved. The law is settled that:

[a] reference is reasonably pertinent if even though it may be in a different field from that of the inventor's endeavor, it is one which, because of the matter with which it deals, logically would have commended itself to an inventor's attention in considering his problem. Thus, the purposes of both the invention and the prior art are important in determining whether the reference is reasonably pertinent to the problem the invention attempts to solve. If a reference disclosure has the same purpose as the claimed invention, the reference relates to the same problem, and that fact supports use of the reference in an obviousness rejection. An inventor may well have been motivated to consider the reference when making his invention. If it is directed to a different purpose, the inventor would accordingly have had less motivation or occasion to consider it.

In re Clay, 23 USPQ2d 1058, 1061 (Fed. Cir. 1992).

The Examiner has utilized Attenhoper '150 in rejecting each of the pending claims for a method of pouring a molten metal. The '150 document relates to "cisterns and tanks, and is designed more particularly for receiving and storing rain-water."

833,150 Patent, Col. 1, L. 9-11. In contrast the present claims are directed to methods of melting and controlling the delivery of a molten metal. It is believed very clear that the '150 document and the present invention are not from the same field of endeavor.

In making the determination one must also consider whether the '150 document is reasonably pertinent to methods of melting and controlling the delivery of a molten metal. Upon review of the '150 document the reader should find that its purpose is to:

permit the water within the cistern to support a layer of oil, provision being made for permitting the discharge of the water of the cistern without disturbing the oil. By this means insects cannot gain access to the water of the tank or cistern, and such a cistern would be eliminated as a breeding place for insects. A further object of this invention is to provide novel means for causing displacement of the sediment at the bottom of the tank where the water flows to the discharge-pipe, and as a further means for causing displacement of the sediment the water is supplied to the tank through an elbow, by which a circular movement is given the water. Another object of the invention is to provide a novel device of this kind wherein the water at the bottom of the tank is the first to be discharged.

833,150 Patent, Col. 1, L. 12-32.

The present invention is directed to methods of melting and controlling the flow of

molten metal and the '150 reference is directed to a system for handling rain water. More specifically, the '150 document is directed to techniques for dealing with contaminants and sediment within the rain water. The '150 document focuses upon things such as placing a layer of oil on the water to prevent insects from entering the rain water and discharging sediment through the pipe B. The Examiner appears to be of the opinion that the utilization of Attenhoper, in Paine will result in the elimination of impurities in the molten metal prior to introducing into the mold. The Examiner is asked to clarify how Attenhoper will eliminate impurities in the molten metal prior to delivery ? The '150 document and the present invention are not from the same field of endeavor, nor do they have the same purpose. Therefore, it is respectfully urged that the '150 document cannot be considered reasonably pertinent to the methods of melting and controlling the flow of molten metal of the present invention. The Examiner is respectfully requested to withdraw the utilization of the '150 reference in the § 103 rejection as it is non-analogous art.

In responding to the Office Action the Applicants have set forth clearly why the utilization of the '150 document is inappropriate because it is from a non-analogous field of art. Additionally, in order to expedite prosecution the Applicants include some remarks regarding the §103 rejections. It is well settled that a claim is unpatentable under 35 U.S.C. §103 "if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains." 35 U.S.C. §103(a) (Supp. 2004).

The seminal case directed to application of 35 U.S.C. §103 is *Graham v. John*

Deere, 383 U.S. 1, 17-18, 148 USPQ 459 (1966), from which four familiar factual inquiries have resulted. The first three are directed to prior art evaluation, and the last is directed to secondary considerations. See Manual of Patent Examining Procedure (MPEP) §2141. From these inquiries, the initial burden is on the Examiner to establish a *prima facie* case of obviousness. "First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on applicant's disclosure." MPEP §2142 (*citing In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991)).

In evaluating claims under 35 U.S.C. §103 the courts have emphasized the statutory language "at the time the invention was made. For it is this phrase that guards against entry into the 'tempting but forbidden zone of hindsight . . .'" *In re Dembiczak*, 50 USPQ2d 1614, 1616 (Fed. Cir. 1999) *citing Loctite Corp. v Ultraseal Ltd.*, 228 USPQ 90, 98 (Fed. Cir 1985). "To prevent the use of hindsight based on the invention to defeat patentability of the invention, this court requires the examiner to show a motivation to combine the references that create the case of obviousness." *In re Rouffet*, 47 USPQ2d 1453, 1458 (Fed. Cir. 1998). In order to properly determine whether the invention is patentable under §103 the Examiners' analysis should be "determined from the vantage point of a hypothetical person having ordinary skill in the

art to which the patent pertains." *Id.* at 1457. In summary the Court of Appeals has instructed that "the Board must explain the reasons one of ordinary skill in the art would have been motivated to select the references and to combine them to render the claimed invention obvious." *Id.*

The law is well settled that the suggestion/motivation to combine or modify under §103 needs to be specific. Where a "statement is of a type that gives only general guidance and is not specific as to the particular form of the claimed invention and how to achieve it ... [s]uch a suggestion may make an approach 'obvious to try' but it does not make the invention obvious." *Ex parte Obukowicz*, 27 USPQ2d 1063, 1065 (U.S. Pat. And Trademark Of. Bd. of Pat. App. & Interferences 1993) (citations omitted). In examining the present patent application the Examiner must act as a person of ordinary skill in the art at the time the invention was made. In formulating the §103 rejections in the parent '155 application the Examiner combined U.S. Patent No. 5,335,711, a process for metal casting, with U.S. Patent No. 833,150, a water cistern for storing rain water, with GB 2,037,200, method for epitaxial solidification.

The Applicants do not understand what the GB 2,037,200 reference is being utilized for in the present §103 rejections. The present claims relate to a method of melting and controlling the flow of molten metal into a casting mold. In formulating the prima facie case of obviousness how is the Examiner utilizing the teaching of this reference? Withdrawal of the utilization of this reference is respectfully requested, however if the reference is being utilized in the rejection clarification is requested to facilitate the Applicants understanding of the rejection.

Independent claim 1 is directed to a method of pouring molten metal into a casting mold within a vacuum furnace. The method utilizes a molten metal pour assembly located within the crucible for controlling the discharge of molten metal through a discharge aperture in the crucible. The primary '711 reference includes a tilt pour crucible 14 with no discharge aperture. The crucible 14 is tilted to align the outlet of the crucible with the pouring tube 27 of the insulation box 24. Further, the crucible 14 is aligned with an air lock 17 to enable the crucible to be charged with fresh metal while in the non-pouring mode. In the Examiner's proposed combination the entire metal delivery system of the '711 reference is replaced by a structure for handling rain-water and no written consideration is provided regarding the effects upon the system. The §103 rejection appears to be founded upon the Examiner's piecing together elements of independent claim 1 from the references and utilizing the Applicants' invention as the guide. Upon consideration of the references and the written statement of the Examiner it appears the motivation to combine is founded upon the use of a dispensing system (Attenhoper) to eliminate impurities in the molten metal prior to delivery into the mold. Applicants request further clarification how Attenhoper will eliminate impurities in the molten metal prior to deliver to the casting mold. Withdrawal of the §103 rejection is respectfully requested as the rejections are founded upon hindsight.

Dependent claims 51-62 are at least patentable as they depend from a independent claim that is believed allowable over the prior art.

Dependent claim 52 includes applying a positive pressure to the molten metal within the crucible. The '771 reference teaches and suggests pouring the molten metal into the mold and then subjecting the metal within the mold to a gas pressure. The '150

reference does also not teach or suggest applying a positive pressure to molten metal within a crucible. Withdrawal of the §103 rejection of claim 52 is respectfully requested for at least these reasons.

Dependent claim 57 includes flowing a quantity of molten metal into a cavity to heat at least a portion of a discharge nozzle. Neither of the references teaches nor suggests a nozzle nor do they teach or suggest flowing metal into a cavity to heat a portion of the nozzle. Withdrawal of the §103 rejection of claim 57 is respectfully requested for at least these reasons.

Dependent claim 58 includes sensing the discharge of molten metal from the discharge aperture, and upon said sensing said stopping occurring. Neither of the references utilized in the §103 rejection teach or suggest the sensing of the molten metal and stopping the filling of the molten metal dispenser. Withdrawal of the §103 rejection of claim 58 is respectfully requested for at least these reasons.

Dependent claim 59 includes connecting the discharging of the molten metal with the casting mold in a confined passageway. Upon review of the references in the §103 rejection there does not appear to be taught or suggested a confined passageway for the delivery of molten metal into the casting mold from the pour assembly. The '711 reference utilizes a tilt pour crucible 14 that drops metal into a pouring tube 27. Withdrawal of the §103 rejection of claim 59 is respectfully requested for at least these reasons.

Dependent claim 62 includes moving the casting mold to align the casting mold inlet with the nozzle. Neither of the references utilized in the §103 rejection teach or

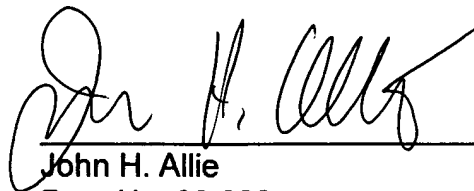
suggest a nozzle nor moving the casting mold to align with the nozzle. Withdrawal of the §103 rejection of claim 62 is respectfully requested for at least these reasons..

In the present Office Action the Examiner has provided detail regarding Paine '711 that does not appear relevant to the present claims. However, the Applicant's do not agree with the Examiner's opinion that:

Paine discloses a system comprising a vacuum furnace (11), a crucible (13) positioned within the vacuum furnace, a heater (25) for melting the metal material, an integral free form fabricated ceramic shell having first opening for receiving molten metal. The ceramic shell has a thin outer wall, and includes supporting members within the mold container and abutting the thin outer wall shown in figure 3, and capable of withstanding casting pressure up to about 24 inches of nickel.

Applicant's Representative respectfully requests an interview on this Application. Further consideration and passage of the application to issuance is respectfully requested.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "John H. Allie", is written over a horizontal line.

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